

REMARKS

Claims 1-25 are pending in the present application and are rejected. Claims 1, 2, 4 and 5 are herein amended. Claim 3 is herein cancelled without prejudice.

Applicants' Response to Claim Rejections under 35 U.S.C. §103

Claims 1-13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Christian (U.S. Patent No. 4,708,931) in view of Schembri (U.S. Patent Publication No. 2004/0087033) and either Schnipelsky et al. (U.S. Patent No. 6,645,758) or the Applicant's admitted prior art (APA).

It is the position of the Office Action that Christian discloses the invention as claimed, with the exception of the biopolymers and biopolymer solutions being transferred sequentially from a storage area to a preprocessing area to a detection area to a waste reservoir in a time-differentiated manner, and the teaching of the substrate being formed using an elastic material. The Office Action relies on either Schembri or Schnipelsky to teach the elastic substrate, and relies on either Schnipelsky or the APA to teach the sequential transferring.

Christian discloses in Figures 12 and 13 a card 121 including a bottom 152 and a top 150 which is a cover layer 134. The card 121 includes a closed channel 122 in which a microassay rod 10 is inserted, where a reaction takes place. Closed channel 122 is provided with an opening 126 from which fluid may be evacuated. The card 121 also includes closed channel 123, which may include a wash solution, closed channel 124, which may include a detecting solution, and closed channel 125, which also may include a wash solution. These closed channels 123, 124

and 125 are connected to closed channel 122 via conduits 131, 132 and 133. The card 121 is designed to be used with solenoid operation roller 130. This roller will squeeze solution out of each of the closed channels in a specified order so that one or more microassays may be done.

On the other hand, Schnipelsky discloses a containment cuvette formed from a thin sheet 12 and a thin sheet 14. As illustrated in Figure 1, the thin sheets 12 and 14 are formed so as to create multiple chambers: reaction chamber 25, first wash chamber 30, detection material chamber 32, second wash chamber 34, detection reagents chamber 36 and stop solution chamber 38. As illustrated in Figure 2, the bottom thin sheet 12 is planar with the exception of the area in which reaction chamber 26 is formed. When a test solution is injected, reaction chamber 26 “pops” out to be flush with the surface of thin sheet 12. See column 12, lines 52-54 and column 13, lines 11-13. Thin sheet 14 is formed to have a raised surface in order to form the aforementioned chambers. The cuvette is used by passing a roller 60 over the various chambers in order to force the various solutions into detection chamber 40.

It is the position of the Office Action that biopolymers are moved successively from detection material chamber 32 to detection area 40 through passageways 21, 43, 44, 48, 49, 50 and 52. However, Applicants respectfully submit that the system of Schnipelsky does not successively move solution through the passageways as alleged by the Office Action. Instead, the system of Schnipelsky is analogous to the system of Christian, in which individual chambers directly flow to the detection area through a plurality of passages. Thus, Applicants respectfully submit that the proposed combination of Christian, Schembri and Schnipelsky does not disclose the invention as claimed.

Next, Applicants address the combination of Christian, Schembri and the APA. As noted by the Office Action, the APA discloses in Figures 5(a) and 5(b) that biopolymers are sequentially moved through a flow path. In response, Applicants respectfully submit that it would not have been obvious to modify the apparatus of Christian by altering the arrangement of the channels and chambers such that biopolymers are transferred sequentially, as taught by the APA.

Christian does not disclose that biopolymers and biopolymer solutions are sequentially transferred to a preprocessing area to a detection area to a waste reservoir. In fact, Christian teaches away from such a construction, since it utilizes an entirely different manner in which to feed solutions, as compared to the APA. In Christian, solutions are transferred to a detection area selectively. “The roller 130 provides means for selectively transferring reagent, sample and wash solutions by peristaltic action into and out of the reaction zone defined by channel 122.” Column 12, lines 68 to column 13, lines 4. If Christian were modified as proposed by the Examiner, all reagent, sample and wash solutions would be mixed together before entering a reaction area. Christian specifically teaches away from this as a desired result. Therefore, for at least the above reasons, it would not have been obvious to one having ordinary skill in the art to modify Christian to incorporate the teachings of the APA. Favorable reconsideration is respectfully requested.

Additionally, Applicants note that in order to more clearly recite the claimed invention, claims 1 and 2 are herein amended in order to incorporate the recitations of claim 3. However,

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since these limitations were previously presented, the amendment does not raise new issues requiring further search or consideration.

Claims 14-18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Christian in view of Schembri and either Schnipelsky or the Applicant's admitted prior art, and in further view of Furcht et al. (U.S. Patent No. 6,303,288).

It is the position of the Office Action that the combination of Christian, Schembri and either Schnipelsky or the APA teaches the invention as claimed, with the exception of teaching that the biochip cartridge is made separable into a first housing and a second housing that are detachably joined. The Office Action relies on Furcht to provide this teaching.

In response to this rejection, Applicants respectfully submit that claims 14-18 are patentable at least due to their dependency on claims 1 or 2, which Applicants submit are patentable for at least the reasons discussed above. Favorable reconsideration is respectfully requested.

Claims 19-25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Christian in view of Schembri and either Schnipelsky or the Applicant's admitted prior art, and in further view of McGarry et al. (U.S. Patent No. 6,642,046).

It is the position of the Office Action that the combination of Christian, Schembri and either Schnipelsky or the APA teaches the invention as claimed, with the exception of teaching that a carrier is a glass slide. The Office Action relies on McGarry to provide this teaching.

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In response to this rejection, Applicants respectfully submit that claims 19-24 are patentable at least due to their dependency on claims 1 or 2, which Applicants submit are patentable for at least the reasons discussed above. Favorable reconsideration is respectfully requested.

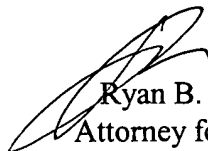
For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

Should the Examiner deem that any further action by applicants would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicants' undersigned agent.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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